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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/463,423	04/07/2000	GING HAUW KHOE	GRIHACP28AU	6300

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EXAMINER

CHORBAJI, MONZER R

ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/463,423

Applicant(s)

KHOE ET AL.

Examiner

MONZER R CHORBAJI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

**This final office action is in response to the amendment received on 03/22/2004**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 18-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Khoe (WO 95/11195).

With respect to claim 18, Khoe discloses a method for oxidizing various types of inorganic species (abstract, lines 1-2 and page 6, lines 7-27) such as arsenic and iron, which is other than iron (11). The method of Khoe is not only limited to oxidizing arsenic or iron, the method is expected to oxidize any type of inorganic species present in an aqueous solution. The method includes the following steps: supplying an oxidizable source of sulfur (page 6, line 22) as a photoabsorber (on page 6, lines 10-27, Khoe teaches that sulfur increases the rate of oxidation of the species when subjected to UV radiation. This means that sulfur absorbs the UV radiation) and oxygen (page 6, lines 31-32) to the solution and irradiating the solution with UV light (page 6, lines 18-19) in order to reduce a toxicity of the inorganic species (abstract, lines 3-4). In addition, Khoe forms an aqueous solution, which includes industrial waste water (page 3, lines 18-26).

With respect to claim 19, Khoe teaches that since the source of sulfur is in an aqueous solution, then it is inherent that sulfur will be in various ionic forms (page 6, lines 10-11).

With respect to claims 20-21, Khoe teaches that inorganic species such as arsenic or iron are in trace quantities (page 16, lines 2-5) of drinking water such that the method of Khoe is not only limited to oxidizing arsenic or iron, the method is expected to oxidize any type of inorganic species present in an aqueous.

With respect to claims 22-24, Khoe discloses the following: the wavelength of UV light is less than 300nm (page 8, lines 11-12), dissolved oxygen is derived from air (page 20, lines 28-30) and the dissolved oxygen is derived from a gas source with an oxygen partial pressure of about 0.2 atmospheres (page 21, lines 1-4).

With regard to claim 25, Khoe discloses the aqueous solution is industrial waste water (page 3, lines 18-26).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claims 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khoe (WO 95/11195).

With respect to claim 18, Khoe discloses a method for oxidizing various types of inorganic species (abstract, lines 1-2 and page 6, lines 7-27) such as arsenic and iron. The method of Khoe is not only limited to oxidizing arsenic or iron, the method is intrinsically capable of oxidizing any type of inorganic species present in an aqueous solution such that iron, arsenic manganese, nickel or any inorganic species can be oxidized by the Khoe method. The method includes the following steps: supplying an oxidizable source of sulfur (page 6, line 22) as a photoabsorber (on page 6, lines 10-27, Khoe teaches that sulfur increases the rate of oxidation of the species when subjected to UV radiation. This means that sulfur absorbs the UV radiation) and oxygen (page 6, lines 31-32) to the solution and irradiating the solution with UV light (page 6, lines 18-

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19) in order to reduce a toxicity of the inorganic species (abstract, lines 3-4). In addition, Khoe forms an aqueous solution, which includes industrial waste water (page 3, lines 18-26).

With respect to claim 19, Khoe teaches that since the source of sulfur is in an aqueous solution, then it is intrinsic that sulfur will be in various ionic forms (page 6, lines 10-11).

With respect to claims 20-21, Khoe teaches that inorganic species such as arsenic or iron are in trace quantities (page 16, lines 2-5) of drinking water such that the method of Khoe is not only limited to oxidizing arsenic or iron, the method is intrinsically expected to oxidize any type of inorganic species present in an aqueous.

With respect to claims 22-24, Khoe discloses the following: the wavelength of UV light is less than 300nm (page 8, lines 11-12), dissolved oxygen is derived from air (page 20, lines 28-30) and the dissolved oxygen is derived from a gas source with an oxygen partial pressure of about 0.2 atmospheres (page 21, lines 1-4).

With regard to claim 25, Khoe discloses the aqueous solution is industrial waste water (page 3, lines 18-26).

### ***Response to Arguments***

7. Applicant's arguments filed 03/22/2004 have been fully considered but they are not persuasive.

On page 3 of the response, applicant argues, "The Applicant respectfully submits that the exclusion of Fe (11), in claim 18, from the inorganic species being oxidized is clearly novel over the disclosure by Khoe '195". The examiner disagrees. Khoe teaches

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that other inorganic species can be oxidized by this method. See the abstract, lines 1-2. Thus, the method of Khoe is expected to oxidize any type of inorganic species present in an aqueous solution and is not limited to oxidizing arsenic or iron.

On page 3 of the response, applicant argues, "That is, the photoabsorber is the oxidizable source of sulfur, and not Fe (ii) as disclosed in Khoe '195". The examiner disagrees. As shown above, the Khoe reference teaches that other inorganic species can be oxidized by this method. For example, arsenic can be oxidized by the Khoe method. In addition, Khoe does not teach that sulfur is limited to oxidizing only Fe (ii). Page of the Khoe reference is one of the various embodiments that is available to one having ordinary skill in the art to experiment with in order to oxidize different types of trace elements as taught by this reference. On page 2 of the reference, Khoe defines a photoabsorber is capable of increasing the rate of oxidation when exposed to UV radiation. On page 6, of the reference, Khoe defines the substance as also capable of increasing the rate of reaction when subjected to UV radiation. Khoe goes on to further provide examples of this substance and one being sulfur such that irradiation amount depends on the type of the substance (i.e., sulfur) used. Thus, sulfur in Khoe is acting as a photoabsorber.

On page 4 of the response, applicant argues, "Contrary thereto, Fe (ii) present in the solution of Khoe '195 absorbs the UV light and not the additionally added agents other than Fe (ii)". The examiner disagrees. On page 6 of the Khoe reference, one example of the "substance" is sulfur (different from iron) that is capable of being oxidized and increasing the rate of reaction. This is the definition of a photoabsorber.

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See page 2 of the Khoe reference. In addition, on page 6, lines 26-27, Khoe suggests that the amount of UV applied depends on the kind of "substance" used (i.e., sulfur). Thus, the sulfur in the Khoe reference is acting as a photoabsorber.

On page 4 of the response, applicant argues, "Nor does Khoe '195 teach, suggest or disclose the specific selection of S (IV) in a method for the treatment of drinking water having trace oxidizable contaminants such as arsenic, manganese, and cerium". The examiner disagrees. On line 22 of page 6 of the Khoe reference, Khoe provide S (IV) as a photoabsorber in oxidizing various inorganic species by applying UV radiation.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 8:30-5:00.

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ROBERT J WARDEN can be reached on (571) 272-1281. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monzer R. Chorbaji *MRC*  
Patent Examiner  
AU 1744  
06/08/2004

*Monzer R. Chorbaji*  
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**Primary Examiner**